CLAIMS

We claim:

Sub A67 1. A communications system for receiving a plurality of messages from a plurality of transmitters, comprising:

a receiver that is configured to receive a composite signal that comprises the plurality of messages from the plurality of transmitters, each message having a transmitter code-phase relative to a code-phase of the receiver, each transmitter code-phase being independent of the code-phase of the receiver, and

a message discriminator that is configured to discriminate at least one message from the plurality of messages based on the transmitter code-phase corresponding to the at least one message.

2. The communications system of claim 1, wherein the message discriminator comprises:

a delay element, operably coupled to the receiver, that is configured to provide a message sample from the composite signal, the message sample corresponding to a select transmitter code-phase relative to the code-phase of the receiver,

a decoder, operably coupled to the delay element, that is configured to decode the message sample based on a receiver code at the code-phase of the receiver, and thereby provide a decoded message sample at the select transmitter code-phase, and

a threshold detector, operably coupled to the decoder, that is configured to discriminate the at least one message corresponding to the decoded message sample, based on a composite energy component of the decoded message sample at the select transmitter code-phase.

3. The communications system of claim 2, further comprising

at least one queue device that is configured to receive a decoded message value from the decoder for the at least one message at the select transmitter code-phase.

4. The communications system of claim 2, wherein the receiver code comprises a pseudo-random noise direct-sequence spread-spectrum (DSSS) code.

5. The communications system of claim 2, wherein

the receiver includes

a downconverter that is configured to provide a downconverted composite signal above a baseband frequency of the plurality of messages, and

the decoder includes

a Fast Fourier Transform (FFT) that is configured to determine the composite energy component.

6. The communications system of claim 5, wherein

the Fast Fourier Transform (FFT) comprises a number of nodes that propagate values to provide the determination of the composite energy component, and

the number of nodes is dependent upon a bandwidth corresponding to a variance of transmit frequencies associated with the plurality of transmitters.

7. The communications system of claim 5, wherein

the Fast Fourier Transform (FFT) is also configured to determine a bit-phase corresponding to the decoded message sample, and

a content of the at least one message is based upon the bit-phase corresponding to the decoded message sample.

8. The communications system of claim 7, wherein

the content of the at least one message is further based on a predicted bit-phase that is based on a plurality of bit-phases of prior message samples.

9. The communications system of claim 1, further comprising

a satellite that is configured to receive the plurality of messages from the plurality of transmitters, and to provide therefrom the composite signal to the receiver.

10. The communications system of claim 1, further comprising:

at least one other decoder, operably coupled to the delay element, that is configured to decode the message sample based on an at least one other receiver code at the code-phase of the receiver, and thereby provide at least one other decoded message sample at the select transmitter code-phase.

11. A communications system comprising:

a plurality of transmitters that are configured to communicate messages to a receiver,

each transmitter of the plurality of transmitters being configured to operate substantially autonomously, and independent of the receiver, and each transmitter being configured to communicate its message to the receiver using substantially identical transmission parameters as each other transmitter, including using a common spreading-code within a common communications channel, and

wherein

each message has an associated code-phase that is independent of the receiver, and independent of each other message, thereby facilitating a discrimination of the messages at the receiver based on different code-phases associated with different messages.

12. The communications system of claim 11, wherein

each message contains an error correction code that facilitates a determination of a content of each message when individual content elements of each message are not received.

13. A method of communication comprising:

receiving a composite signal that comprises a plurality of messages from a plurality of transmitters, each message having a transmitter code-phase relative to a code-phase of the receiver, each transmitter code-phase being independent of the code-phase of the receiver, and

discriminating at least one message from the plurality of messages based on the transmitter code-phase corresponding to the at least one message.

14. The method of claim 13, wherein discriminating the at least one message includes:

sampling the composite signal to provide a message sample, the message sample corresponding to a select transmitter code-phase relative to the code-phase of the receiver,

decoding the message sample based on a receiver code at the code-phase of the receiver to provide a decoded message sample at the select transmitter code-phase, and

determining an energy component of the decoded message sample at the select transmitter code-phase,

comparing the energy component to a threshold value to discriminate the at least one message corresponding to the decoded message sample.

15. The method of claim 14, further comprising:

determining a decoded message value from the decoded message sample, and

queuing the decoded message sample in a queue that is associated with the select transmitter code-phase to form the at least one message.

16. The method of claim 14, wherein the receiver code comprises a pseudo-random noise direct sequence spread-spectrum (DSSS) code.

17. The method of claim 14, wherein receiving the composite signal includes

downconverting the composite signal to provide a downconverted composite signal above a baseband frequency of the plurality of messages, and

transforming the downconverted composite signal via a Fourier transform to determine the composite energy component.

18. The method of claim 17, wherein

transforming the downconverted composite signal via the Fourier transform also provides a bit-phase corresponding to the decoded message sample, and

determining a decoded message value based upon the bit-phase corresponding to the decoded message sample.

19. The method of claim 18, wherein

the content of the at least one message is further based on a predicted bit-phase that is based on a plurality of bit-phases of prior message samples.

20. The method of claim 19, further comprising

receiving the plurality of messages from the plurality of transmitters via a satellite and providing thereby the composite signal to the receiver.